

Developing a short form of the Positive and Negative Perfectionism Scale (PANPS-SF)

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Abstract

The present trio of studies center around Terry-Short et al.'s (1995) Positive and Negative Perfectionism Scale (PANPS) and the convergent and discriminant validity of a short form of the PANPS. The results of the first study (CFA of the original structure of the PANPS) support acceptable levels of fit with RMSEA. Using the Item Response Theory (IRT) metrics, the PANPS-SF was reduced to 20 items. The PANPS-SF showed a good fit with the data when we ran a confirmatory factor analysis (CFA) on the newly developed short form. The results of the final study indicate that the PANPS does offer significant predictive validity over Hewitt and Flett's (1991) HMPS subscales in predicting well-being. Therefore, based on our empirical work, we conclude that the PANPS is an adequate measure of perfectionism and that the scale offers an alternative theoretical assessment of perfectionism that other scales may not.

Keywords: Positive perfectionism; negative perfectionism; validity

1. Introduction – Background and Controversy of the PANPS

Perfectionism has long been conceptualized as pathological by both the clinical and the lay communities. However, research over the last four decades indicates perfectionism is far too complex to categorize as inherently negative. Since Hamachek's (1978) proposal that perfectionism can be either "normal" (healthy) or "neurotic" (unhealthy), the development of numerous multidimensional perfectionism models has followed. Each model intended to capture both the construct of perfectionism itself and the differences that matter between different types of perfectionism: Frost, Marten, Lahart, & Rosenblate's (1990) model utilizes a categorical approach, while Hewitt and Flett's (1991) is based on internal and interpersonal motivations. The present series of studies examines the factor structure, convergent and discriminant validity of Terry-Short, Owens, Slade, and Dewey's (1995) Positive and Negative Perfectionism Scale (PANPS), which is based on reinforcement theory (Slade, 2009).

Inspired by Hamachek's (1978) conceptualization of normal and neurotic perfectionism, Terry-Short et al. (1995) developed their dual process model of perfectionism (Slade and Owens, 1998). Slade, Coppel, and Townes (2009) describe the framework for the PANPS as follows: "positive perfectionism is defined as 'cognitions and behaviors which are directed toward the achievement of certain high-level goals in order to obtain positive consequences,' while negative perfectionism refers to 'cognitions and behaviors which are directed toward the achievement of certain high-level goals in order to avoid, or escape from, negative consequences'" (Slade et al., 2009).

The PANPS has been used to study the relationships between perfectionism and a number of variables, including shame and guilt (Fedewa, Burns, and Gomez, 2005), regret (Bergman, Nyland, and Burns, 2007), maladaptive procrastination (Sederlund, Burns, and Rogers, 2020), eating behaviors (Haase, Prapavessis, and Owens, 2002; Choo and Chan, 2013; Wang and Li, 2017), and depression (Wang and Zhang, 2017, anxiety, and stress (Wang & Zhang, 2017; Soliemanifar et al., 2015), and negatively correlated with life satisfaction (Sederlund et al., 2020).

In contrast, positive perfectionism is found to be uncorrelated with maladaptive emotional states and behaviors. These studies have found that positive perfectionism is positively correlated with life satisfaction (Sederlund et al., 2020) and positive affect (Wang & Zhang, 2017), and negatively correlated with depression and rumination (Wang & Zhang, 2017; Sederlund et al., 2020; Soliemanifar et al., 2015). These results suggest that perfectionism may not always be pathological.

1.1 Theoretical Critiques of PANPS

The PANPS's inclusion of a "positive" perfectionism has resulted in controversy. Hewitt and Flett (2006) raise concerns about this inclusion in their critique of Slade and Owens' (1998) dual-process model of positive and negative perfectionism, in which they state that positive perfectionism must be at least partially motivated by avoidance of negative consequences, and thus cannot be truly "positive" or healthy. They express concern that conceptualizing a healthy or positive form of perfectionism constitutes a muddying of the waters: conflating other constructs, such as conscientiousness and high personal standards, with a form of perfectionism.

Perfectionism, they state, is inherently maladaptive. To illustrate this, the authors point to the relationships between indices of distress and all forms of perfectionism using the Multidimensional Perfectionism Scale (HMPS) (Hewitt & Flett, 1991), particularly the positive correlation between self-oriented perfectionism (which is considered the most “adaptive” form of perfectionism according to the HMPS) and multiple indices of distress (Hewitt and Flett, 1993). The authors conclude that because perfectionism cannot be healthy or “positive” the conceptualization of the PANPS is inherently problematic.

However, their criticisms of the dual-process model suggest fundamental misconceptions of Slade and Owens’ (1998) definition of positive and negative perfectionism. Slade and Owens (2008) highlight this in their rebuttal to Hewitt and Flett’s (2006) critiques. They also point out that much of Hewitt and Flett’s (2006) argument is based on conflating “positive perfectionism” with Self-Oriented Perfectionism. This is problematic because the positive perfectionism subscale of the PANPS is not intended to replicate the Self-Oriented Perfectionism subscale of the Hewitt & Flett MPS. Self-oriented perfectionism cannot be deemed equivalent to positive perfectionism. They conclude that while Hewitt and Flett’s (2006) article raises legitimate concerns about their conceptualization of healthy perfectionism, their argument is based on misunderstandings and may eclipse the significant overlap between Slade and Owens’ (2008) and Hewitt and Flett’s (2006) ideologies.

Furthermore, the authors stress that while the term “perfectionism” may have muddled and often negative connotations, using the term in both scientific and lay communities requires updating the negative perception (Slade & Owens, 2008). Indeed, it is time to consider the potentially adaptive features of some forms of perfectionism. Research using the PANPS has consistently found positive perfectionism to be positively related to adaptive traits (Soliemanifar et al., 2015; Wang & Zhang, 2017; Sederlund et al., 2020) and unrelated to maladaptive traits (Fedewa et al., 2005; Bergman et al., 2007; Choo & Chan, 2013; Wang & Li, 2017; Wang & Zhang, 2017; Sederlund et al., 2020). Evidence also supports the adaptiveness of positive perfectionism in neurocognitive performance (Slade et al., 2009). These findings indicate the need to consider the existence of a positive form of perfectionism and examine the implications of such a concept.

1.2 Critiques of PANPS Factor Structure and Construct Validity

While Hewitt and Flett’s (2006) theoretical questions regarding the PANPS have long been addressed, other researchers have raised different concerns. In one study using elite athletes, Haase and Prapavessis (2004) ran a confirmatory factor analysis on the PANPS. The CFA resulted in a poor fit when compared to the factor structure of the original PANPS. Egan, Piek, Dyck, and Kane (2011) also stress the PANPS’s apparently poor factor structure based on their data. In addition to this, Egan et al.’s (2011) exploration of the PANPS’s construct validity turned up some perplexing findings: Beck Depression Inventory (BDI-II) scores strongly correlated with positive perfectionism in the study’s clinical sample (n=40), even higher than that with negative perfectionism. The study also reports a medium positive correlation between positive perfectionism and the FMPS (Frost et al., 1990) Concern Over Mistakes subscale. Despite the evidence in Egan et al.’s (2011) study for the validity of both the positive and negative perfectionism subscales, the authors conclude that the PANPS does not adequately measure positive and negative perfectionism.

Egan et al.’s (2011) finding of a correlation between positive perfectionism and BDI scores has been neither previously observed nor since corroborated. One limitation of Egan et al.’s (2011) study was the decision (reportedly made for budgetary reasons) to administer the BDI-II only to the clinical group. Even if we ignore the small sample size, the aforementioned decision makes their conclusions’ generalization questionable. The clinical group already evidenced higher-than-average levels of depression. To qualify as a member of the clinical group, it is a given that any protective factors an individual reported were insufficient in protecting them against developing a mental disorder. Numerous other studies using the PANPS, and measures of depression (CESD / BDI) have reported only negative correlations between positive perfectionism and depressive symptomatology when there is a relationship between the variables at all (Wang and Zhang, 2017; Sederlund et al., 2020; Soliemanifar et al., 2015). Overall, Egan et al.’s (2011) study is a weak dissenter, an outlier with questionable design, insufficient to dismiss the utility of the PANPS.

In addition to echoing previous researchers’ concerns about the factor structure, Stoeber and Madigan (2016) question the construct validity of the PANPS, asserting that it does not accurately measure perfectionistic strivings (PS) and perfectionistic concerns (PC) (see also Stoeber and Otto, 2006). According to Stoeber and Madigan (2016), the PANPS, rather than measuring PS and PC directly, examines the consequences of perfectionistic behavior and the participants’ feelings toward those consequences instead. Therefore, they argue, based on their content concerns as well as data from Haase and Prapavessis (2004) and Egan et al.’s (2011) studies, the PANPS should not be used to study perfectionism at all (Stoeber and Madigan, 2016).

The PANPS does not, however, solely measure the consequences of perfectionistic behavior. More accurately, the scale explores participants' emotional and cognitive responses to the outcomes of perfectionistic behavior "on the basis of perceived consequences" (Terry-Short et al., 1995). While this method may appear indirect, it is, in fact, well in line with Terry-Short et al.'s (1995) original theoretical stance on operationalizing and assessing perfectionism. As the conceptual basis for the model was derived from Skinnerian reinforcement theory (Slade and Owens, 1998; Slade et al., 2009), it would naturally focus on the perceived consequences of perfectionistic behavior as a means to determine the potential of such consequences to reinforce behavior. Therefore, it is not, as Stoeber and Madigan (2016) assert, unlikely that by measuring the perceived consequences of perfectionism to determine what reinforces and thereby motivates perfectionistic behavior, the positive perfectionism subscale of the PANPS may, in fact, measure perfectionistic strivings.

1.3 The Present Study

The present series of studies are designed to replicate the factor structure and evaluate the convergent and discriminant validity of a short form of the Positive and Negative Perfectionism Scale (PANPS-SF). While Haase and Prapavessis's (2004) findings would appear problematic, the present study seeks to clarify their findings and Egan et al.'s (2011) assertions concerning the factor structure of the PANPS. In the first study, we ran a CFA of the 40-item PANPS. In the second study, we reduced the PANPS to a short form using Item Response Theory (IRT) metrics. Finally, our third study utilized hierarchical regression modeling to evaluate the convergent and discriminant validity of our short form of the PANPS over HMPS self-oriented perfectionism (SOP) and socially prescribed perfectionism (SPP) subscales.

2. Studies 1 and 2

2.1. Methods

In our first study, we aimed to clarify the quality of the PANPS factor structure. We used a confirmatory factor analysis (CFA) to determine the fit of Terry-Short et al.'s (1995) original model. Our second study reduced the items in the PANPS to develop a short form of the measure (PANPS-SF) using item response theory (IRT) metrics, in which we ran another CFA to ensure the fit indices support the new, shortened scale.

2.1.1. Participants

Study 1 is an aggregate sample of 2,723 undergraduate students (participants from all studies published and unpublished by the third author) enrolled in PSY 101 coursework at a large Midwestern public university from the Fall semester of 2005 to the Winter semester of 2015. 66% of participants identified as female, and 34% as male. The mean age of the sample was 18.9 (SD= 2.35). The racial/ethnic composition of our sample was reported as 85.6% white, 6.2% African American or black, 4.2% Hispanic or Latino, 2.1% Asian or Pacific Islander, and 1.9% reported as two or more races. Our Study 2 sample consisted of 1027 undergraduate students at a large Midwestern public university. See Plominski (2018) for details of participant demographics.

2.1.2. Materials

We used the Positive and Negative Perfectionism Scale (or PANPS; Terry-Short et al., 1995) to measure perfectionism. The PANPS is divided into two subscales according to the types of reinforcement which hold perfectionistic behaviors in place: positive reinforcement leads to positive perfectionism by rewarding perfectionistic behaviors, and negative reinforcement leads to negative perfectionism by prompting the individual to avoid negative consequences of behavior that is less than perfect. The original design had 20 items in each subscale, but Slade and Owens' (2002) work placed 18 items in the positive perfectionism subscale and 22 in the negative perfectionism subscale. All items are scored on a Likert scale, from strongly disagree (1) to strongly agree (5).

2.1.3. Procedure

Materials were distributed through the GVSU's Introductory Psychology courses in which participants were enrolled. Informed consent was obtained, and participants received credit for completing the survey. Upon completion, all participants were debriefed and thanked for their participation.

2.2. Results

2.2.1. Confirmatory Factor Analysis – PANPS scale

According to Table 1, the a priori 2-factor correlated model fits the data best, with RMSEA showing a good fit compared to a 2-factor uncorrelated or 1-factor model. However, the CFI and TLI indices suggest the model does not reach acceptable levels of fit. For the 2-factor correlated model, all 40 items loaded significantly on the appropriate latent factor.

Table 1. Comparisons among fit indices for PANPS full scale models in total sample (N=2723)

Model	X ²	df	X ² /df	CFI	TLI	RMSEA	AIC
Model 1 - 2 correlated factors	10534.43	739	14.25	0.734	0.719	.070 (.069-.071)	10696.43
Model 2 - 2 uncorrelated factors	10911.26	740	14.74	0.723	0.708	.071 (.070-.072)	11071.26
Model 3 - 1 factor	17632.94	740	23.83	0.541	0.516	.092 (.090-.093)	17792.94

The CFA demonstrates that the 2-factor correlated model of the PANPS is most appropriate to fit the data.

2.2.2. Item Response Theory for PANPS Scale Reduction

The CFA described above suggests that to shorten the PANPS scale, the positive perfectionism and negative perfectionism scales should be examined using IRT procedures separately to ensure the unidimensionality assumption of (IRT) is met. IRT was conducted using Multilog 7.3 program (Thissen, Chen, & Bock, 2003). A 2-parameter IRT model was used (Samejima, 1969) to determine which items provided the most information for the Positive and Negative Perfectionism short form (PANPS-SF). These metrics were the item discrimination (a), item difficulty (b), and the graphical representation of these metrics, the Item Characteristics Curve (ICC). Using these metrics, the PANPS was reduced to 20 items (10 items each for positive and negative perfectionism) which can be found in Appendix A.

Table 2. Comparisons among fit indices for PANPS short-form models in total sample (N=2723)

Model	X ²	df	X ² /df	CFI	TLI	RMSEA	AIC
Model 1 - 2 correlated factors	2189.50	169	12.96	0.872	0.856	.066 (.064-.069)	2271.50
Model 2 - 2 uncorrelated factors	2397.90	170	14.25	0.859	0.842	.069 (.067-.072)	2477.90
Model 3 - 1 factor	6446.57	170	37.92	0.602	0.555	.116 (.114-.119)	6526.57

NOTE. For the CFI and TLI indices, a value greater than or equal to 0.85 indicates a good fit (Benet-Martinez & Karakitapoglu-Aygun, 2003). SRMR values less than 0.1 indicate a good fit (Marsh, Hau, & Wen, 2004) and for RMSEA values less than or equal to 0.08 represent a good fit (Benet-Martinez & Karakitapoglu-Aygun, 2003). For the AIC values, the lower the value, the better the fit (Sakamoto, Ishiguro, & Kitagawa, 1999).

2.2.3. Confirmatory Factor Analysis – PANPS-SF

A CFA of the PANPS-SF was conducted to reconsider the fit indices on the newer, reduced scale. As seen in Table 2, the a priori 2 correlated factors model fit the data best, and according to conventional standards, the PANPS-SF showed a good fit with the data. The item standardized regression weights for the a priori 2-factor correlated model and the full 40-item PANPS scale ranged from .335-.662 for Positive Perfectionism and .214-.687 for Negative Perfectionism. When comparing the fit of the specific items to the data, the PANPS-SF had item standardized regression weights which ranged from .429-.648 for Positive Perfectionism and .501-.671 for Negative Perfectionism. The lower end of these ranges is higher, and less variance is seen in these ranges compared to the full 40-item PANPS scale. Also, the correlation between Positive and Negative perfectionism was .325 using the PANPS-SF compared to .405 using the PANPS 40-item full scale. This suggests that parity of the measure can be obtained without sacrificing the relationship between this multidimensional measure of perfectionism.

2.3. Discussion

The results of our CFA of the original structure of the PANPS support acceptable levels of fit with RMSEA but suggest that improvements to the scale may allow more confidence in the theoretical utility of positive and negative perfectionism. Using IRT metrics, the PANPS-SF was reduced to 20 items, 10 measuring positive perfectionism and 10 for negative perfectionism. The PANPS-SF showed a good fit with the data when we ran a CFA on the newly developed short form.

3. Study

3.1. Methods

This study explored the convergent and discriminate validity of the PANPS in contrast to Hewitt and Flett's (1991) Multidimensional Perfectionism Model (HMPS) self-oriented perfectionism (SOP) and socially prescribed perfectionism (SPP) subscales. The domain of this validity was a set of clinically related outcomes denoted by satisfaction with life, satisfaction with self, self-esteem, social self-esteem, negative mood, appearance self-esteem, romantic self-esteem, athletic confidence, speaking self-esteem, academic self-esteem, and general confidence.

Incremental predictive validity of the PANPS was assessed using hierarchical regression techniques, assessing PANPS subscale predictability after HMPS subscales and covariate was entered on a previous stage.

3.1.1. Participants

The study consisted of 380 undergraduate students from a mid-sized Midwestern university. The mean age of the sample was 18.8 years old, with a standard deviation of 2.52. The racial/ethnic composition of the sample was reported to be 92% Caucasian, 2% African American, 2% Asian American, and 4% other. Fourteen participants were eliminated from the data set due to incomplete data.

3.1.2. Materials

PANPS positive perfectionism (PP) and negative perfectionism (NP) subscales (Terry-Short et al., 1995) (see 2.1.2).

The Multidimensional Perfectionism Scale (HMPS) (Hewitt & Flett, 1991) self-oriented perfectionism (SOP), and socially prescribed perfectionism (SPP) subscales were also used to measure perfectionism. The HMPS utilizes a conceptualization of perfectionism divided according to the social motivations of perfectionistic behavior. This measure consists of 45 items on a 7-point Likert scale, with 1 indicating strongly disagree and 7 indicating strongly agree.

The following 11 variables were used as dependent variables in the regression runs:

The Extended Satisfaction with Life scale (ESWLS) (Allison, Alfonso, & Dunn, 1991) was used to assess a participant's perception of their overall satisfaction with life. The original scale contains 25 items designed to measure a person's perception of subjective well-being in five areas: general life, social life, sexual life, relationship, and self. Each of the questions is rated on a scale ranging from 1 (strongly disagree) to 5 (strongly agree). The satisfaction with self and general life subscales were used for our study purposes.

Rosenberg's Self-esteem scale (RSES) (Rosenberg, 1965) was used to measure a sense of global self-esteem about oneself. Each of the 10 items is answered on a 5-point Likert scale ranging from 1 (always false) to 5 (always true). The Personal Evaluation Inventory (PEI) (Shrauger & Schohn, 1995) was used to assess self-confidence across eight subscales and 54 items. The self-confidence subscales are academic, appearance, athletics, romantic, social, speaking, mood, and general self-confidence. The mood subscale was labeled as "negative mood" in our dependent variables. Each item is rated on a 4-point Likert scale ranging from 1 (strongly agree) to 4 (strongly disagree).

3.1.3. Procedure

A stepwise multiple regression was conducted to evaluate whether the Positive and Negative subscales of the PANPS were effective in predicting the set of 11 clinical outcome DVs, after predictability from HMPS-sop and HMPS-spp subscales has been removed.

At Stage 1 of the analysis, the two HMPS subscales SOP and SPP were entered into the equation. At Stage 2, the Negative subscale of the PANPS was entered into the equation. Finally, at Stage 3, the PANPS Positive subscale was added. Taken together, Stages 2 and 3 isolate the effects of adding Negative and Positive PANPS, respectively.

3.2. Results.

Table 3 contains the correlation coefficients and descriptive statistics of the perfectionism predictors and 11 selected psychological outcomes.

Table 3. Descriptive Statistics and Correlation Coefficients Between the Perfectionism Predictors (PANPS and HMPS) and 11 Psychological Outcomes.

Variable	<i>n</i>	<i>M</i>	<i>SD</i>	PP	SOP	NP	SPP
SO	380	-15.22	4.08	0.09	-0.09	-0.27***	-0.07
M	380	-16.62	3.47	0.07	-0.12*	-0.39***	-0.13**
AP	377	-16.51	4.18	0.08	-0.09	-0.41***	-0.09
R	380	-16.67	4.66	0.00	-0.17***	-0.28***	-0.14***
AT	380	-10.83	3.73	0.13*	0.04	-0.08	-0.03
SP	380	-16.74	4.79	0.12*	-0.10	-0.20***	-0.03
AC	380	-15.86	3.65	0.20***	0.04	-0.35***	-0.06
G	380	-16.09	3.42	0.12*	-0.11*	-0.52***	-0.14**
SE	380	30.95	6.92	0.06	0.01	-0.29***	0.03
S_S	380	18.76	3.94	0.24***	0.03	-0.32***	-0.03
S_L	380	18.49	3.93	0.26***	0.02	-0.38***	-0.07
PP	380	38.23	4.83	--	--	--	--
SOP	379	53.61	11.11	--	--	--	--
NP	380	28.03	7.28	--	--	--	--
SPP	379	56.48	10.03	--	--	--	--

Note: SO= Social Confidence; M= Mood Confidence; AP= Appearance Confidence; R= Romantic Confidence; AT= Athletic Confidence; SP= Speaking Confidence; AC= Academic Confidence G= General Confidence; SE= Self-esteem; S_S= Satisfaction with Self; S_L= Satisfaction with Life; PP= Positive Perfectionism; SOP= Self-Oriented Perfectionism; NP= Negative Perfectionism; SPP= Socially Prescribed Perfectionism.

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

Table 4 contains the stepwise regression results for the set of 11 dependent measures. These tables present the three analysis stages in columns, along with the associated changes in R², standardized regression weights, and Cohen's f² effect size index for the R² change. Cohen's f² was calculated using the formula $(R_{2AB} - R_{2A}) / (1 - R_{2AB})$, where R_{2AB} and R_{2A} refer to the models with and without the tested variable, respectively.

Table 4. Hierarchical Regression Analysis: HMPS and PANPS subscales

Variable	R2(SPP,SOP)	Delta R2	Beta	Cohen	Delta R2	Beta	Beta	Cohen
		NEG_Psf	NEG_Psf	f2	POS_Psf	POS_Psf	NEG_Psf	f2
Satisfaction with Life	0.011	0.164	-0.449	0.199	0.089	0.323	-0.482	0.121
Satisfaction with Self	0.066	0.124	-0.39	0.153	0.074	0.295	-0.421	0.101
Self-Esteem	0.001	0.107	-0.362	0.12	0.01	0.107	-0.373	0.011
Social Self-Esteem	0.008	0.07	-0.294	0.076	0.024	0.169	-0.311	0.027
Negative Mood	0.019	0.134	-0.405	0.158	0.023	0.165	-0.422	0.028
Appearance Self-Esteem	0.009	0.16	-0.442	0.193	0.028	0.18	-0.461	0.035
Romantic Self-Esteem	0.031	0.053	-0.255	0.058	0.008	0.095	-0.265	0.009
Athletic Confidence	0.001	0.012	-0.121	0.012	0.018	0.147	-0.136	0.019
Speaking Self-Esteem	0.013	0.039	-0.219	0.041	0.039	0.215	-0.242	0.043
Academic Self-Esteem	0.016	0.136	-0.408	0.16	0.053	0.249	-0.434	0.067
General Confidence	0.019	0.257	-0.562	0.355	0.042	0.222	-0.585	0.062
			Average	0.139			Average	0.047

The overall best predictor across the dependent variable set is PANPS-negative, followed by PANPS-positive and HMPS-SPP. Regression results across the full set of DVs show that the PANPS Negative subscale offers incremental predictive validity over the HMPS subscales SOP and SPP. The average Cohen f^2 effect size index for this incremental validity across the 11 DVs was 0.139, falling in the nominal “medium” effect size range. Similarly, the second regression stage analysis showed that the PANPS Positive subscale offered incremental predictive validity over the HMPS subscales, even when the PANPS Negative subscale was already in Stage 1. The average Cohen f^2 effect size index for this incremental validity across the 11 DVs was 0.047, falling near the nominal “small” effect size range.

3.3. Discussion

The results indicate that, for the chosen set of dependent variables, the PANPS subscales were superior predictors to the SOP and the SPP of the HMPS. The overall pattern of the results reveals that the PANPS Negative subscale is a stronger predictor than the PANPS Positive subscale. In addition to this as well, the pattern of standardized regression weights is consistent with the theoretical expectations derived earlier in this paper, i.e., that PANPS Negative and PANPS Positive would have opposite relationships with the outcome-dependent variables; the PANPS Positive subscale is positively correlated with the set of DVs, while the PANPS Negative has a negative correlation with the set of DVs. Thus, the PANPS offers a unique perspective in perfectionism research that cannot be accounted for with the HMPS.

4.1 General Discussion

Overall, our data challenge assertions in previous research (Stoeber and Otto, 2006; Egan et al., 2011; Stoeber and Madigan, 2016) that the PANPS shows inadequate internal consistency and construct validity. Given the results of our first study, we can confirm that the original PANPS shows sufficient internal consistency. Following the development of our PANPS-SF, we evaluated the adequacy of its internal consistency. The results of our final study indicate that in addition to being reliable, the PANPS assesses unique aspects of perfectionism that are not included in the Hewitt and Flett (1993) MPS.

Our data evidence the discriminant validity the PANPS has over specified HMPS subscales as well. Thus, while the degree of overlap between the two scales indicates that they both capture the construct of perfectionism, our findings demonstrate that the PANPS subscales offer a unique approach to the assessment of perfectionism that provides a nuanced understanding of the behavioral consequences that may result from positive or negative perfectionist cognitions that the HMPS does not account for. Having empirically demonstrated that positive perfectionism should not be conflated with self-oriented perfectionism, we can support Slade and Owens' (2008) defense of the PANPS against Hewitt and Flett's (2006) critiques and echo their speculation that perhaps a form of perfectionism can be "positive" after all.

In contrast to Haase and Prapavessis' (2004) findings, our CFA supported the internal consistency of the original 40-item PANPS and resolved their longstanding concern that the factor structure of the PANPS is untenable. Additionally, our data support a better fit with RMSEA than Egan et al.'s (2011) data, as well as confirming their findings concerning the adequate internal consistency of the model. Unlike the short form Haase and Prapavessis (2004) developed, our PANPS-SF evidenced sufficient incremental validity. Having demonstrated this, we propose that our PANPS-SF will be valuable in future perfectionism research, allowing researchers to conduct more comprehensive surveys while minimizing the risk of participant fatigue (Ruvio et al., 2008).

As was discussed earlier in this paper, Stoeber and Madigan (2016) assert that the PANPS does not measure perfectionistic strivings and perfectionistic concerns. Instead, they echo the concerns of Stoeber and Otto (2006) that the scale measures the consequences of perfectionistic behavior. While Slade et al. (2009) provided adequate rationale for the method by which the PANPS measures perfectionism – since the PANPS is based on Skinnerian reinforcement theory (Slade & Owens, 1998), it is natural that the model would assess the consequences of perfectionism and the subjects' reactions toward those consequences to identify the reinforcers holding perfectionistic behavior in place. Future research could establish whether the PANPS and its corresponding theoretical framework align with the conceptualization of perfectionism regarding perfectionistic strivings and concerns. Indeed, the convergent validity of the PANPS with the HMPS in our third study suggests that the scale reflects perfectionistic strivings and concerns. However, this does not discount the unique assessment that the PANPS can contribute to studying perfectionism.

4.2. Limitations

This study has two main limitations. First, our research was purely based on survey results. We recognize the inherent difficulties that can arise using self-report measures (Greenspon, 2000). Second, our sample consisted primarily of undergraduate students, which requires us to be careful in generalizing our results to the general population. In addition to the above limitations, we acknowledge a more theoretical limitation – namely, whether the PANPS is predicated fully upon a reinforcement model. While we find coherence in this model, we question the degree to which it adheres to the theoretical tenants of the behaviorist paradigm. From the behavioral perspective, the term "negative perfectionism" is misleading. Given that "negative reinforcement" is equivalent to escape conditioning, one might expect negative perfectionism to assess perfectionistic behavior performed to escape from negative stimuli already being experienced. The negative perfectionism subscale, contrarily, primarily appears to measure perfectionistic behavior intended to avoid negative consequences, including consequences never previously experienced. In this way, negative perfectionism may be more appropriately titled "avoidant perfectionism." This stated it would be foolish to discredit the importance of measuring true "negative perfectionism," or perfectionistic behavior motivated by the desire to escape aversive conditions currently being experienced. Such aversive conditions could include social conditions like familial abuse and internal conditions like anxiety and depression. It may be that perfectionism motivated by escape conditioning is the purest form of maladaptive perfectionism.

4.3. Conclusions

In conclusion, our results corroborate previous research (Bergman et al., 2007; Besharat, 2005; Fedewa et al., 2005; Afshar et al., 2011; Aldahadha, 2018; Lo et al., 2020) that support both the theoretical utility and the structural integrity of the PANPS. We also found evidence for the significant convergent and discriminant validity of the PANPS, which leads us to conclude that the model has much to offer in continuing perfectionism research. Due to its conceptual elegance, the dual process model of positive and negative perfectionism allows researchers to assess a unique dimension of perfectionism and to examine the construct from a behavioral perspective.

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Appendix A. Items for the PANPS-SF

Positive Perfectionism items

- 1 I take pride in being meticulous when doing things.
 - 2 Producing a perfect performance is a reward in its own right.
 - 3 Other people respect me for my achievements.
 - 4 I feel good when pushing out the limits.
 - 5 I like to please other people by being successful.
 - 6 I gain great approval from others by the quality of my accomplishments.
 - 7 My successes spur me on to greater achievements.
 - 8 I enjoy the glory gained by my successes.
 - 9 I gain deep satisfaction when I have perfected something.
 - 10 I get fulfillment from totally dedicating myself to a task.
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Negative Perfectionism items

- 1 When I start something, I feel anxious that I might fail.
 - 2 It feels as though my best is never good enough for other people.
 - 3 The problem of success is that I must work even harder to please others.
 - 4 If I make a mistake, I feel that the whole thing is ruined.
 - 5 I know the kind of person I ought or want to be, but feel I always fall short of this.
 - 6 If I fail people, I fear they will cease to respect or care for me.
 - 7 I feel guilty or ashamed if I do less than perfectly.
 - 8 No matter how well I do I never feel satisfied with my performance.
 - 9 I worry what others think if I make mistakes.
 - 10 When I do things, I feel others will judge critically the standard of my work.
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